

IN THE CLAIMS:

1 1-5 (CANCELLED)

1 6. (PREVIOUSLY PRESENTED) A method for creating and maintaining a plurality of
2 virtual servers within a server, the method comprising the steps of:

3 partitioning resources of the server to establish an instance of each virtual server
4 by allocating units of storage and network addresses of network interfaces of the server to
5 each instance of the virtual server, and sharing an operating system and a file system of
6 the server among all of the virtual servers;

7 enabling controlled access to the resources using logical boundary checks and se-
8 curity interpretations of those resources within the server; and

9 providing a vfiler context structure including information pertaining to a security
10 domain of the vfiler.

1 7. (ORIGINAL) The method of Claim 6 wherein the step of allocating comprises the step
2 of providing a vfstore list of the vfiler context structure, the vstore list comprising point-
3 ers to vfstore soft objects, each having a pointer that references a path to a unit of storage
4 allocated to the vfiler.

1 8. (ORIGINAL) The method of Claim 7 wherein the step of allocating further comprises
2 the step of providing a vfnet list of the vfiler context structure, the vfnet list comprising

3 pointers to vfnet soft objects, each having a pointer that references an interface address
4 data structure representing a network address assigned to the vfiler.

1 9. (ORIGINAL) The method of Claim 8 wherein the step of enabling further comprises
2 the step of performing a vfiler boundary check to verify that a vfiler is allowed to access
3 certain storage resources of the filer.

1 10. (ORIGINAL) The method of Claim 9 wherein the step of performing comprises the
2 step of validating a file system identifier and qtree identifier associated with the units of
3 storage.

1 11. (ORIGINAL) The method of Claim 10 wherein the step of performing further com-
2 prises the steps of:

3 for each request to access a unit of storage, using the identifiers to determine
4 whether the vfiler is authorized to access the unit of storage;

5 if the vfiler is not authorized to access the requested unit of storage, immediately
6 denying the request;

7 otherwise, allowing the request; and

8 generating file system operations to process the request.

1 12. (CANCELLED)

1 13. (PREVIOUSLY PRESENTED) A system adapted to create and maintain a plurality
2 of virtual servers within a server, the system comprising:

3 storage media configured to store information as units of storage resources, the
4 units of storage resources allocated among each of the virtual servers;

5 network interfaces assigned one or more network address resources, the network
6 address resources allocated among each of the virtual servers;

7 an operating system having a file system resource adapted to perform a boundary
8 check to verify that a request is allowed to access to certain units of storage resources on
9 the storage media, each virtual server allowed shared access to the file system;

10 a context data structure provided to each virtual server, the context data structure
11 including information pertaining to a security domain of the virtual server that enforces
12 controlled access to the allocated and shared resources; and

13 a processing element coupled to the network interfaces and storage media, and
14 configured to execute the operating and file systems to thereby invoke network and stor-
15 age access operations in accordance with results of the boundary check of the file system.

1 14. (ORIGINAL) The system of Claim 13 wherein the units of storage resources are vol-
2 umes and qtrees.

1 15. (ORIGINAL) The system of Claim 14 further comprising a plurality of table data
2 structures accessed by the processing element to implement the boundary check, the table
3 data structures including a first table having a plurality of first entries, each associated
4 with a virtual server and accessed by a file system identifier (fsid) functioning as a first

5 key into the table, each first entry of the first table denoting a virtual server that com-
6 pletely owns a volume identified by the fsid.

1 16. (ORIGINAL) The system of Claim 15 wherein the table data structures further in-
2 clude a second table having a plurality of second entries, each associated with a virtual
3 server and accessed by a second key consisting of an fsid and a qtree identifier (qtreeid),
4 each second entry of the second table denoting a virtual server that completely owns a
5 qtree identified by the fsid and qtreeid.

1 17. (ORIGINAL) The system of Claim 16 wherein the server is a filer and wherein the
2 virtual servers are virtual filers.

1 18. (CANCELLED)

1 19. (CANCELLED)

1 20. (PREVIOUSLY PRESENTED) Apparatus adapted to create and maintain a plurality
2 of virtual filers (vfilers) within a filer, the apparatus comprising:

3 means for allocating dedicated resources of the filer to each vfiler;

4 means for sharing common resources of the filer among all of the vfilsers; and

5 means for enabling controlled access to the dedicated and shared resources using
6 logical boundary checks and security interpretations of those resources within the

7 server and for providing a vfiler context structure including information pertaining
8 to a security domain of the vfiler.

1 21. (CANCELLED)

1 22. (CANCELLED)

1 23. (PREVIOUSLY PRESENTED) A computer readable medium containing executable
2 program instructions for creating and maintaining a plurality of virtual filers (vfilers)
3 within a filer, the executable program instructions comprising program instructions for:
4 allocating dedicated resources of the filer to each vfiler;
5 sharing common resources of the filer among all of the vfilers; and
6 enabling access to the dedicated and shared resources using logical boundary checks and
7 security interpretations of those resources within the server and providing a vfiler context
8 structure including information pertaining to a security domain of the vfiler.

1 24. (CANCELLED)

1 25. (CANCELLED)

1 Please add new claims 26 *et al.*

1 26. (New) A method for creating and maintaining a plurality of virtual servers within a
2 server, the method comprising the steps of:

3 allocating units of storage and network addresses of network interfaces of the
4 server to each instance of the virtual server;

5 using boundary checks to access resources allocated to the virtual servers, where a
6 particular virtual server is limited by the boundary check to only access the resources as-
7 signed to that particular virtual server.

1 27. (New) An apparatus adapted to create and maintain a plurality of virtual servers
2 within a server, comprising:

3 means for allocating units of storage and network addresses of network interfaces
4 of the server to each instance of the virtual server;

5 means for using boundary checks to access resources allocated to the virtual serv-
6 ers, where a particular virtual server is limited by the boundary check to only access the
7 resources assigned to that particular virtual server.

1 28. (New) A system adapted to create and maintain a plurality of virtual servers within a
2 server, the system comprising:

3 a storage media configured to allocate units of storage and network addresses of
4 network interfaces of the server to each instance of the virtual server network interfaces

- 5 assigned one or more network address resources, the network address resources allocated
- 6 among each of the virtual servers;
- 7 an operating system adapted to perform a boundary check to verify access to re-
- 8 sources allocated to the virtual servers, where a particular virtual server is limited by the
- 9 boundary check to only access the resources assigned to that particular virtual server.